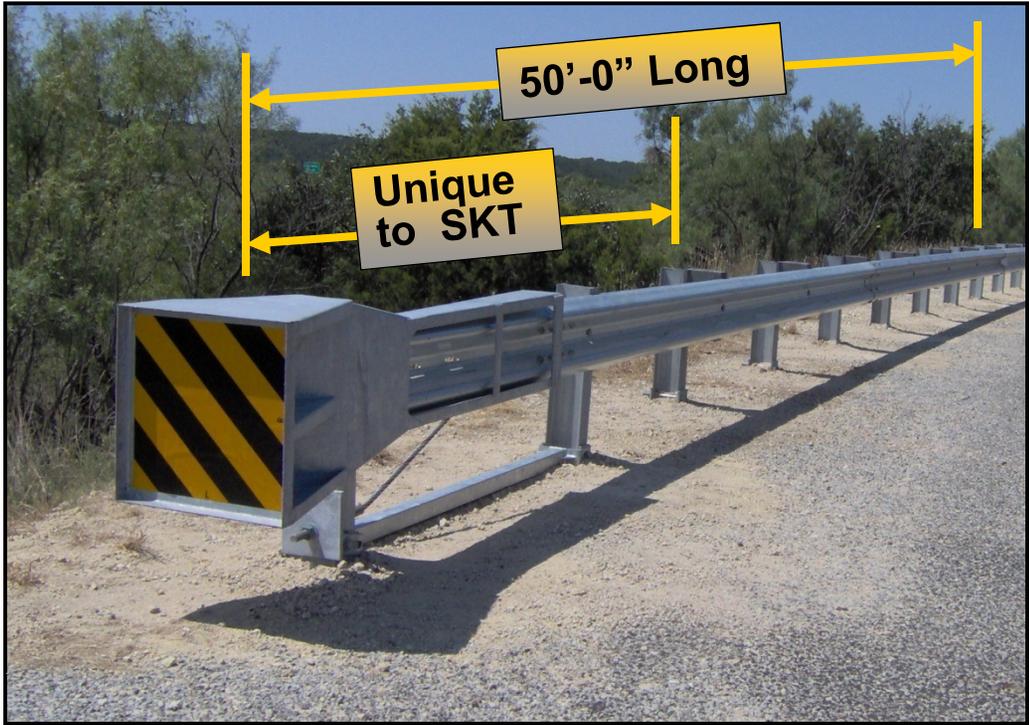


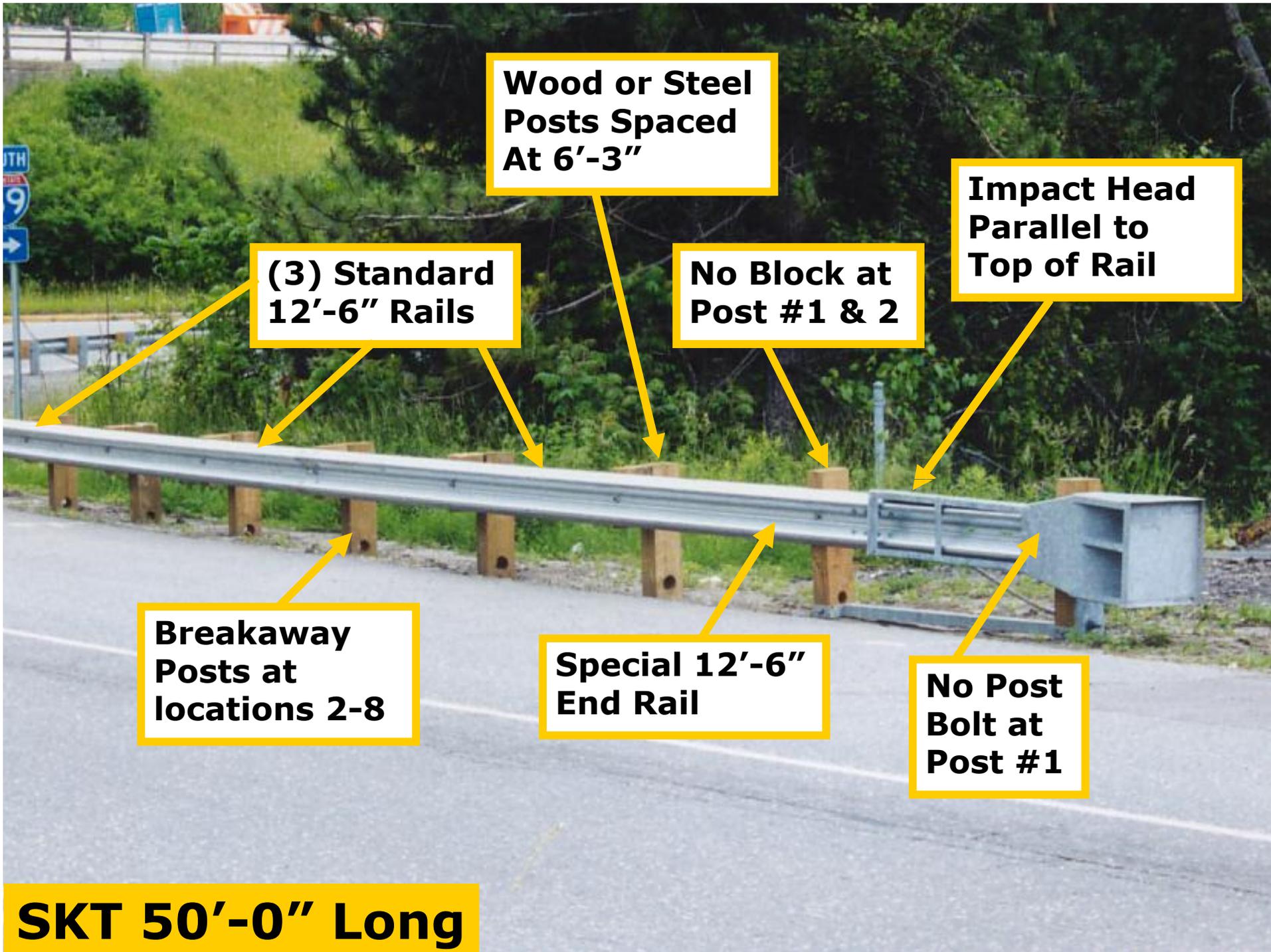
DamageWise Guardrail Training





SKT





Wood or Steel Posts Spaced At 6'-3"

(3) Standard 12'-6" Rails

No Block at Post #1 & 2

Impact Head Parallel to Top of Rail

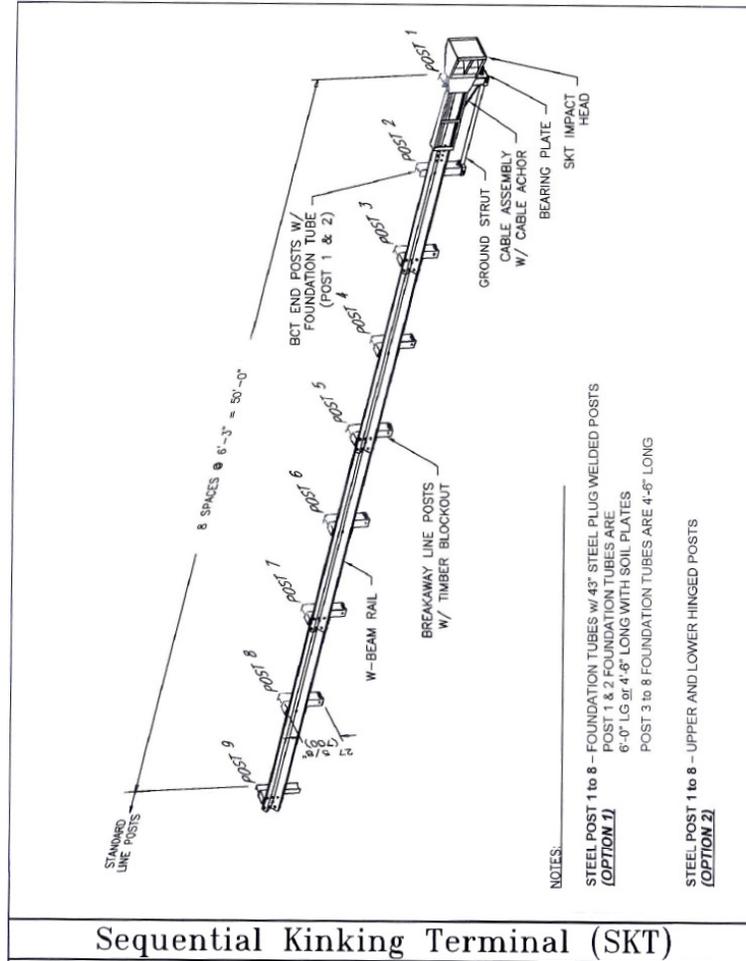
Breakaway Posts at locations 2-8

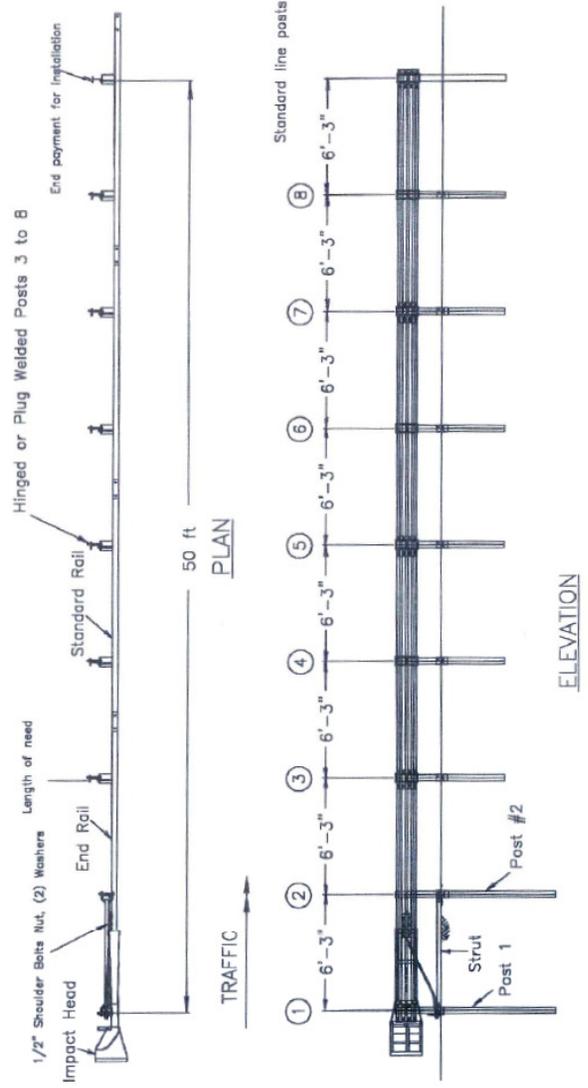
Special 12'-6" End Rail

No Post Bolt at Post #1

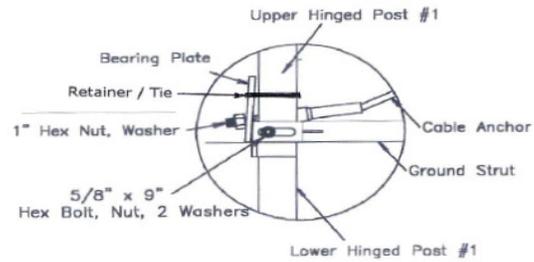
SKT 50'-0" Long

SKT Overview



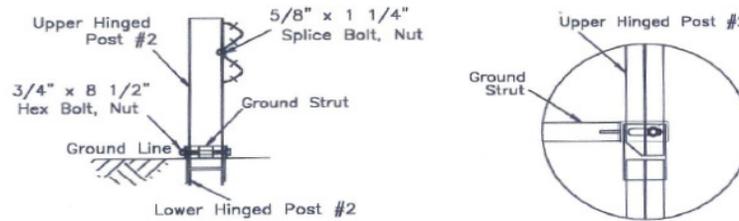


Plan and Elevation View of Steel Post SKT System

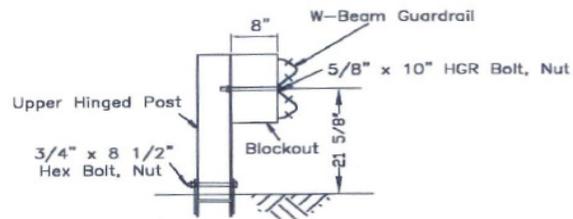


Hinged Steel Post #1 Side View

(Note that retainer/tie to keep bearing plate from rotating is not shown)



Hinged Steel Post #2

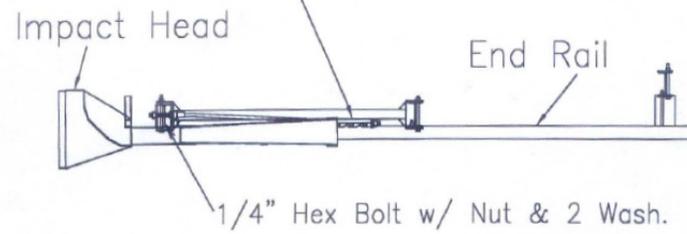


Hinged Steel Posts #3 to #8

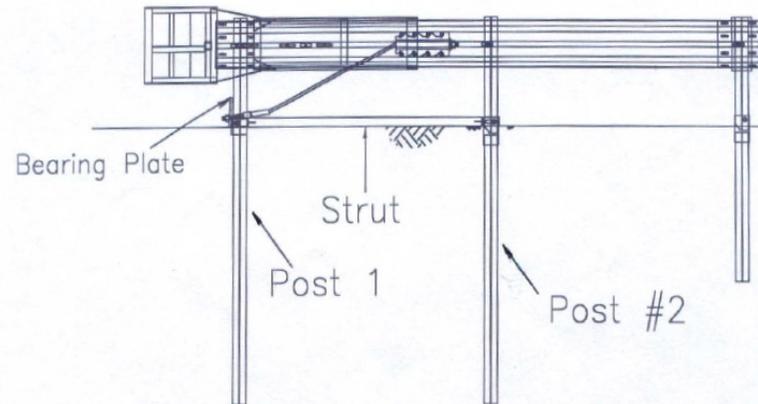
NOTE: Be sure the 5/8" x 9" hex bolt at Hinged Post #1 is on the upstream side of the post.
Be sure the 3/4" x 8 1/2" hex bolt at Hinged Posts 2-8 is on the downstream side of the post.

Section Views of Bolted Hinged Steel End Posts and Line Posts

Cable Anchor Bracket &
1/2" Shoulder Bolts Nut, (2) Washers

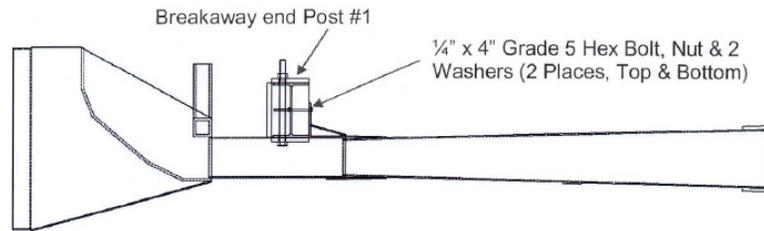


Note that there is no Bolt at Post #1

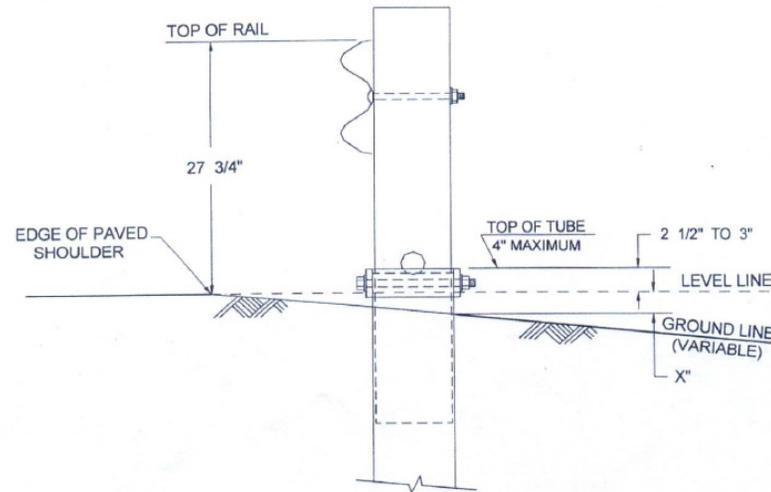


NOTE: The impact head is attached to post #1. The W-Beam rail section is not attached to post #1.

SKT Above-Ground Details at Post Locations 1 and 2.



SKT Impact Head Connection to Steel Post



(Wood Post #2 Shown / Steel Post Requirements Similar)

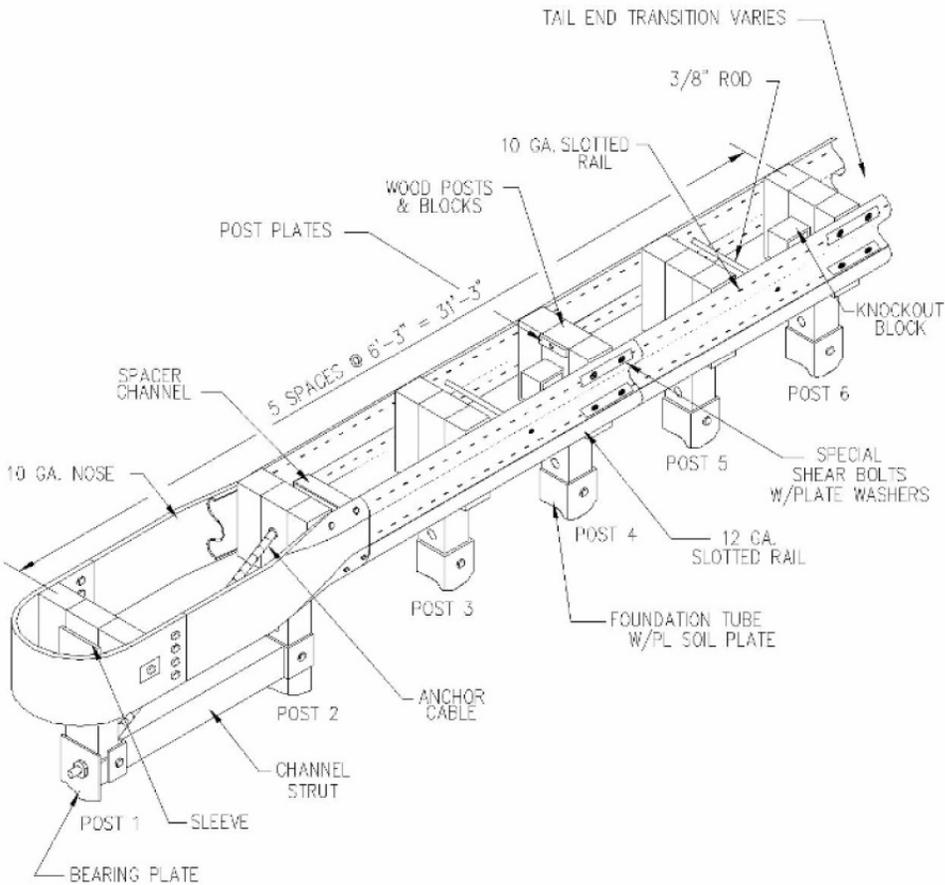
CAT



8.50 x 11.00 in

CAT-350™

**FOR SPECIFIC DETAILS, REFER TO THE CAT-350™
DRAWING(S) AND
THE STATE STANDARD DRAWING(S)**



Stages of a Cat System

APPENDIX C
 QUANTITY PURCHASE AWARD AGREEMENT
 INDIANA DEPARTMENT OF TRANSPORTATION (INDOT)
 PRICING AND ITEM DESCRIPTIONS FOR C-A-T ATTENUATORS

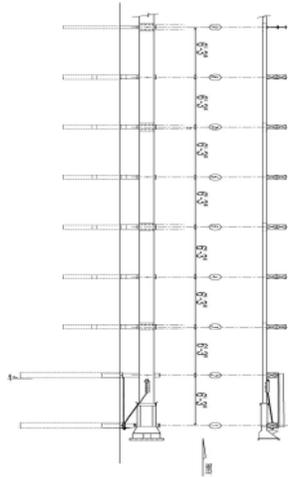
I. COMPLETE NOSE ASSEMBLIES

ITEM	EST QTY	UNIT	DESCRIPTION	UNIT PRICE	PS#
1	1	EA	Nose Assembly (Stage 1) complete consists of: 1-NP nose plate 2-SD side plates 1-SR sleeve 1-PY post 2-B blocks 1-PJ pipe sleeve 2-W washers Associated hardware		
2	1	EA	12 GA. Slotted rails (Stage 2) complete consist of: 2-WG slotted rails 1-Y rod 1-X knockout block 1-PX post 1-PS pipe sleeve 4-A blocks 1-PB post (16 per set) - T splice bolts (16 per set) - PW washers (2 set) - W washers Associated hardware		
3	1	EA	10 GA. Slotted rail (Stage 3) complete consist of: 2-WB slotted rails 1-PZ posts 2-PB posts 6-A blocks 1-X knockout block 1-Y rod 2-PP post plates 16-T splice bolts 16-PW washers Associated hardware		
4	1	EA	Front anchorage system - complete consists of: 1-CZ cable assembly 1-BF bearing plate 1-SH spacer channel 1-S strut Associated hardware		

ET



ET- PLUS™
50' (15.24 m) System
 FOR SPECIFIC DETAILS, REFER TO THE TRINITY ET
 DRAWING(S)
 AND THE STATE STANDARD DRAWING(S)

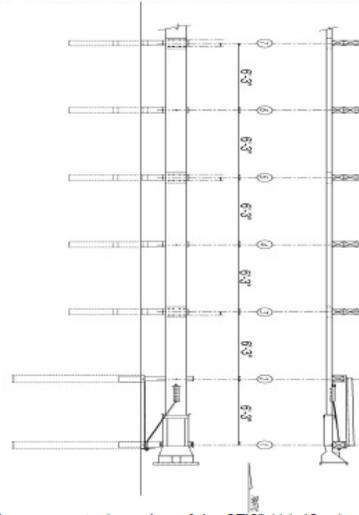


(This represents 1 version of the 50' (15.24 m) system)

NOTES:

1. Alternate to long foundation tube without soil plate is short tube with soil plate at locations 1 and 2, Hinged Breakaway (HBA) Post™ at locations 1 and 2, or Hinged Breakaway (HBA) Post™ at location 1 and Steel Yielding Terminal Post™ (SYTP) at location 2; long foundation tube or short tube with soil plate at location 1 and SYTP at location 2.
2. Alternate to two 12'6" (3.81 m) long rail elements is one 25'0" (7.62 m) long rail element.
3. Short steel foundation tubes without soil plates and breakaway wood posts, or Hinged Breakaway (HBA) Post™ may be specified for locations 3 and 4. Controlled Release Terminal (CRT) posts can be used for post locations 5 through 8.
4. Alternates to Note 3 combinations for locations 3 through 8 are: 1) All short tubes without soil plates and breakaway wood posts; 2) All HBA posts; 3) All CRT posts; 4) All SYTP.

ET-PLUS™
37'6" (11.43 m) System
 FOR SPECIFIC DETAILS, REFER TO THE TRINITY ET
 DRAWING(S)
 AND THE STATE STANDARD DRAWING(S)

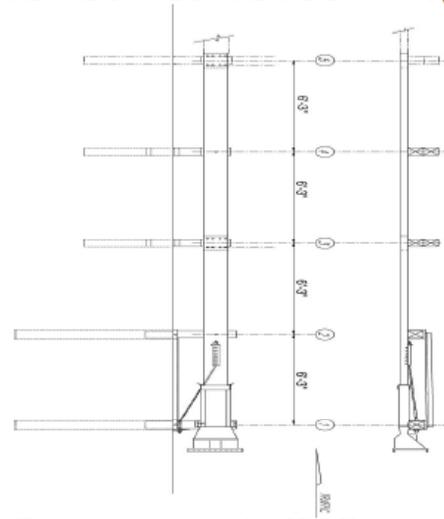


(This represents 1 version of the 37'6" (11.43 m) system)

NOTES:

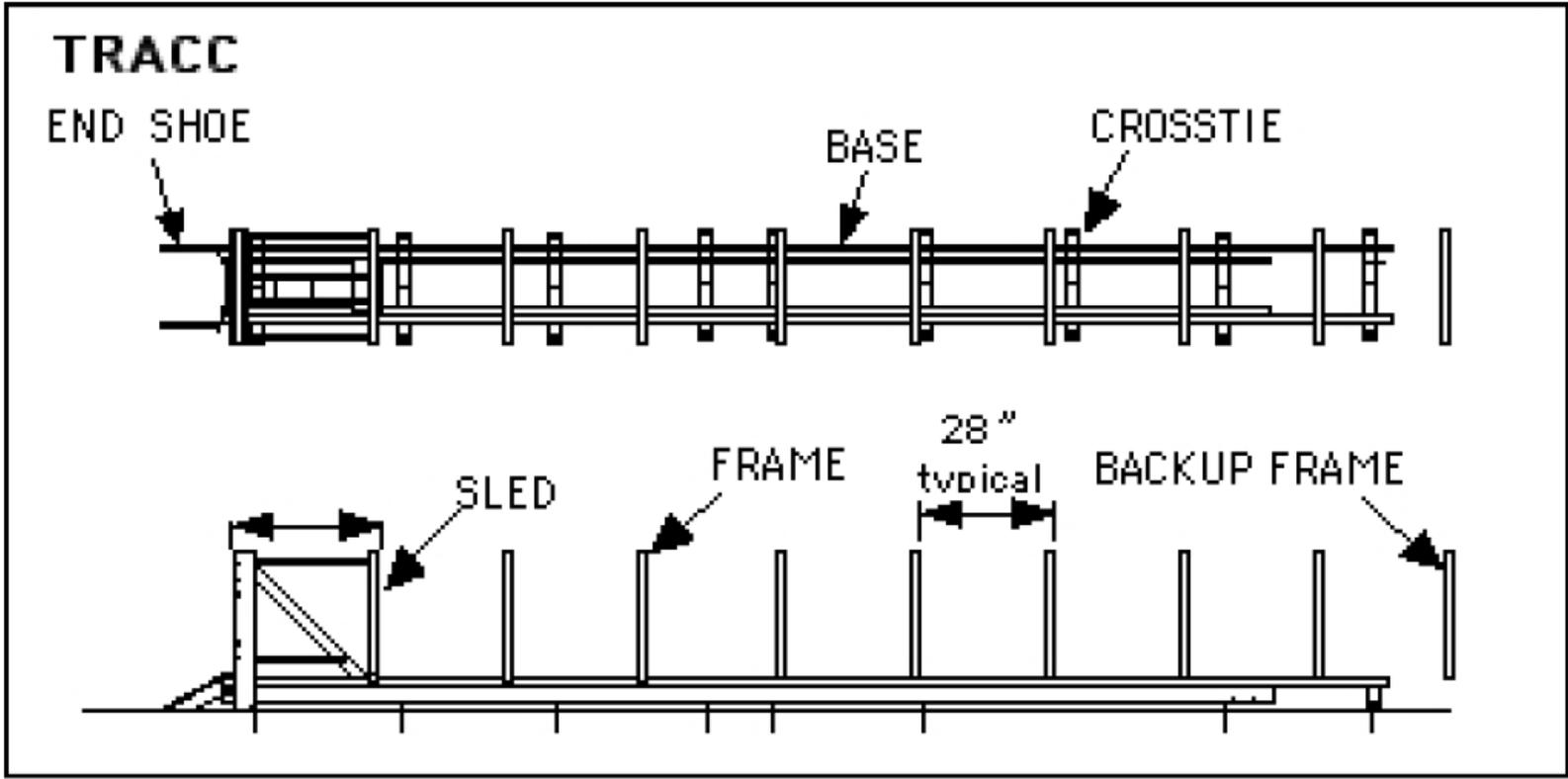
1. Alternate to long foundation tube without soil plate is short tube with soil plate at locations 1 and 2, Hinged Breakaway (HBA) Post™ at locations 1 and 2, or Hinged Breakaway (HBA) Post™ at location 1 and Steel Yielding Terminal Post™ (SYTP) at location 2; long foundation tube or short tube with soil plate at location 1 and SYTP at location 2.
2. Alternate to two 12'6" (3.81 m) long rail elements is one 25'0" (7.62 m) long rail element.
3. Short steel foundation tubes without soil plates and breakaway wood posts, or Hinged Breakaway (HBA) Post™ may be specified for locations 3 and 4. Controlled Release Terminal (CRT) posts can be used for post locations 5 through 7. Alternates to Note 3 combinations for locations 3 through 7 are: 1) All short tubes without soil plates and breakaway wood posts; 2) All HBA posts (HBA required at location 8); 3) All CRT posts; 4) All SYTP (SYTP required at location 8).

ET-PLUS™ (TL-2)
25' (7.62 m) System
 FOR SPECIFIC DETAILS, REFER TO THE TRINITY ET
 DRAWING(S)
 AND THE STATE STANDARD DRAWING(S)

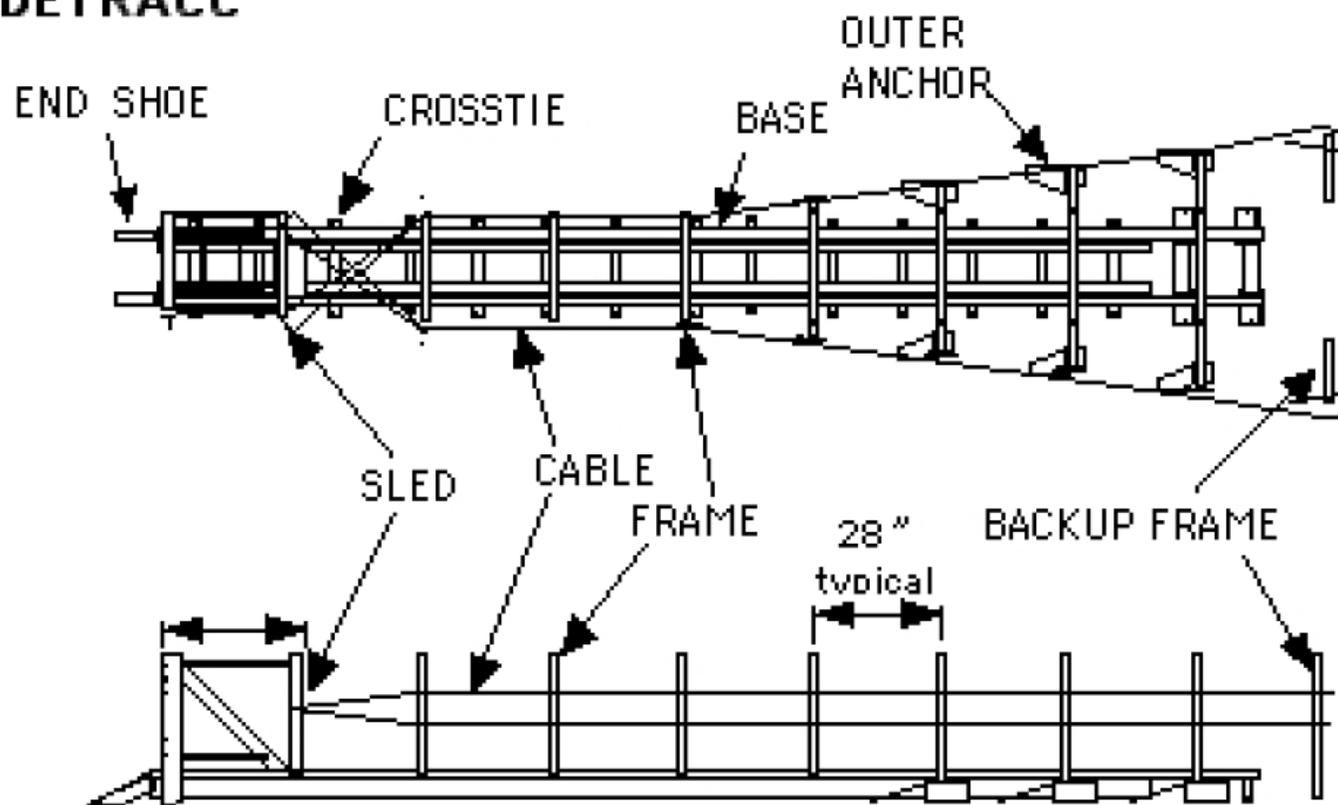


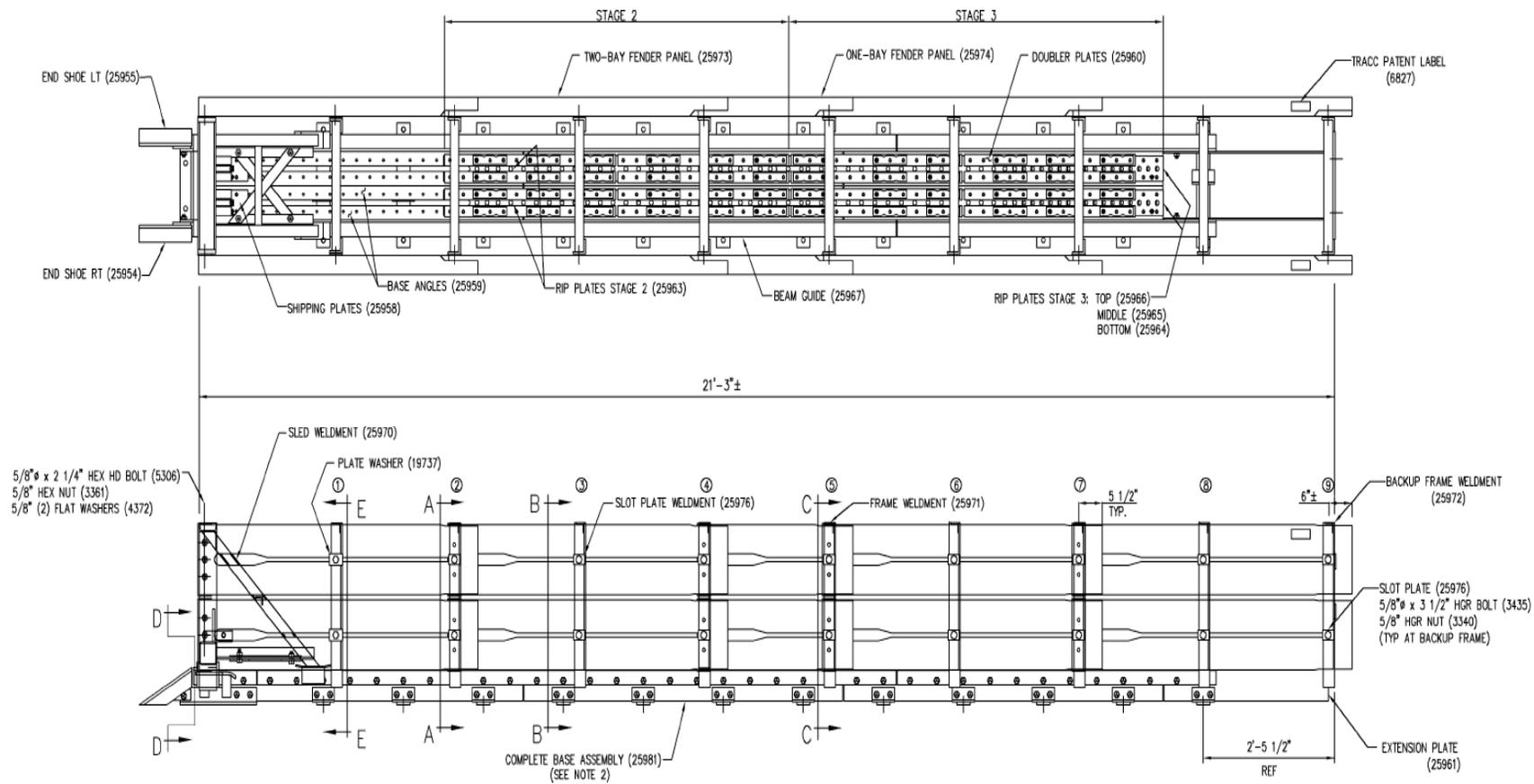
NOTES:

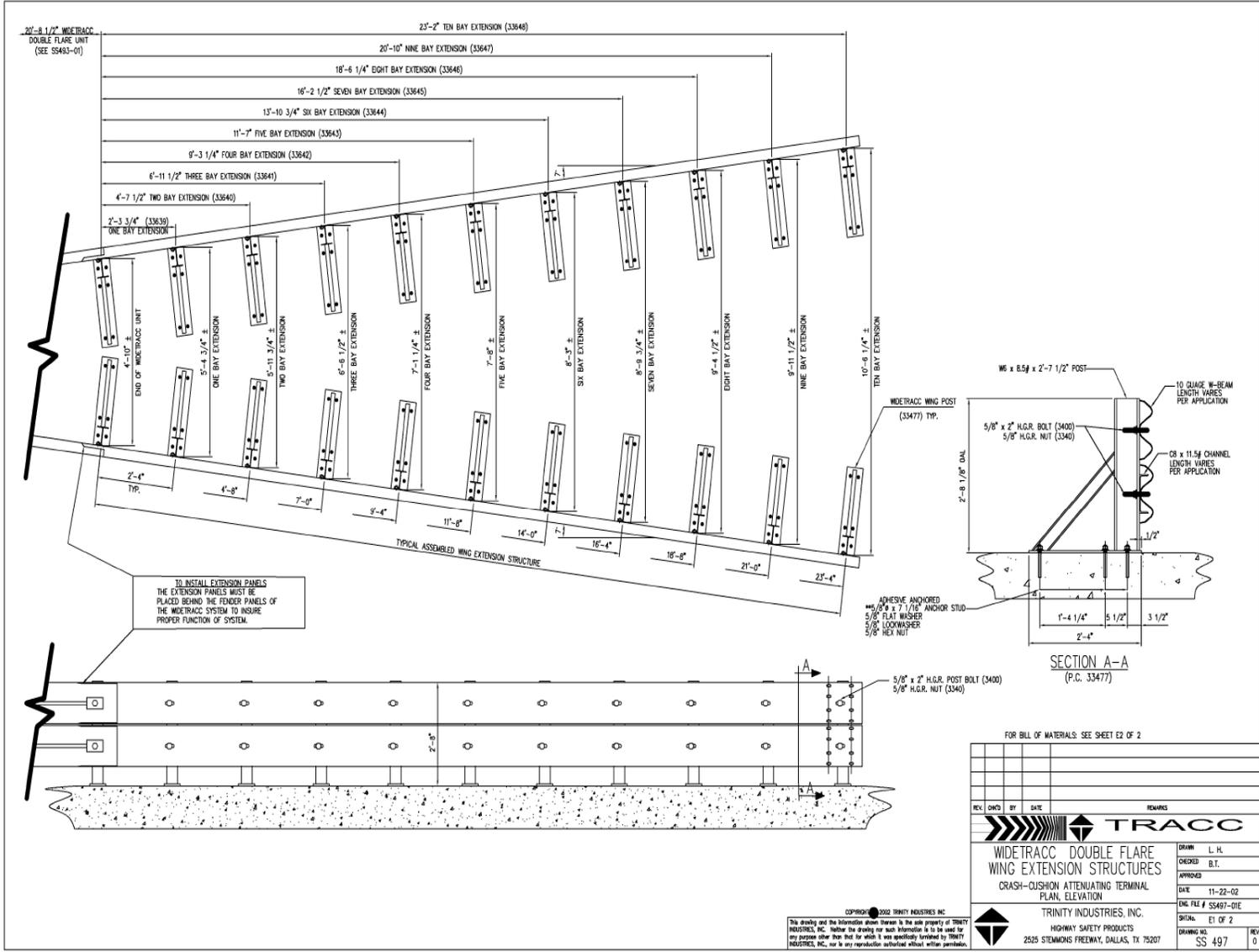
1. Alternate to long foundation tube without soil plate is short tube with soil plate at locations 1 and 2, Hinged Breakaway (HBA) Post™ at locations 1 and 2, or Hinged Breakaway (HBA) Post™ at location 1 and Steel Yielding Terminal Post™ (SYTP) at location 2; long foundation tube or short tube with soil plate at location 1 and SYTP at location 2.
2. Alternate to two 12'6" (3.81 m) long rail elements is one 25'0" (7.62 m) long rail element.
3. Short steel foundation tubes without soil plates, or Hinged Breakaway (HBA) Posts™ may be specified for locations 3 and 4.
4. Alternates to Note 3 combinations for locations 3 and 4 are: 1) All CRT posts; 2) All SYTP.



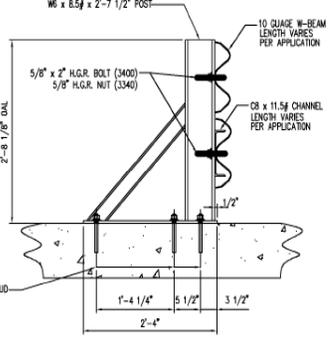
WIDETRACC







TO INSTALL EXTENSION PANELS THE EXTENSION PANELS MUST BE PLACED BEHIND THE FENDER PANELS OF THE WIDETRACC SYSTEM TO INSURE PROPER FUNCTION OF SYSTEM.



SECTION A-A
(P.C. 33477)

FOR BILL OF MATERIALS: SEE SHEET E2 OF 2

REV.	CHG.	BY	DATE	REMARKS

TRACC

WIDETRACC DOUBLE FLARE WING EXTENSION STRUCTURES	DRWN: L. H.
CRASH-CUSHION ATTENUATING TERMINAL PLAN, ELEVATION	CHEKED: B.T.
TRINITY INDUSTRIES, INC.	APPROVED:
HIGHWAY SAFETY PRODUCTS	DATE: 11-22-02
2525 STEMMONS FREEWAY, DALLAS, TX 75207	ENG. FILE # 55497-01E
	SITING: E1 OF 2
	DRAWING NO. SS 497
	REV. 0

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QuadGuard

QuadGuard[®] II System



Quad Guard Parts

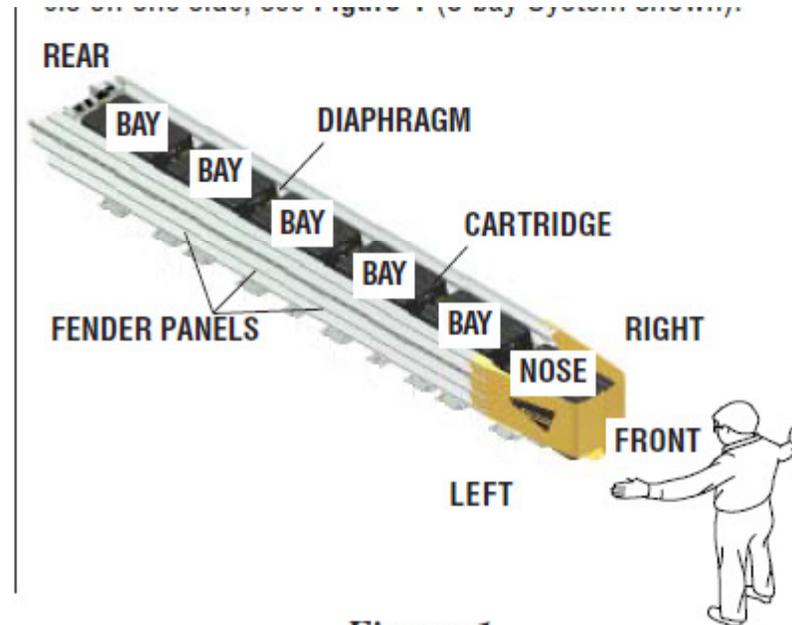


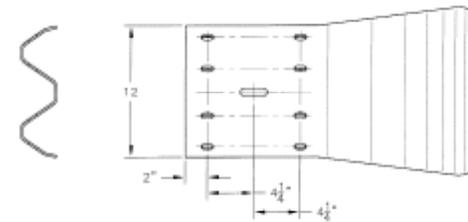
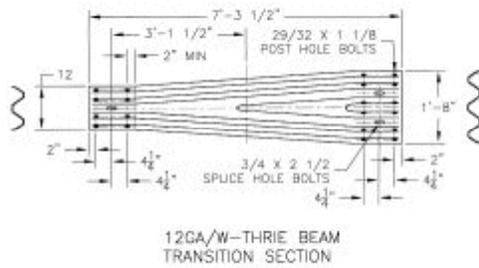
Figure 1



W-Beam Guardrail



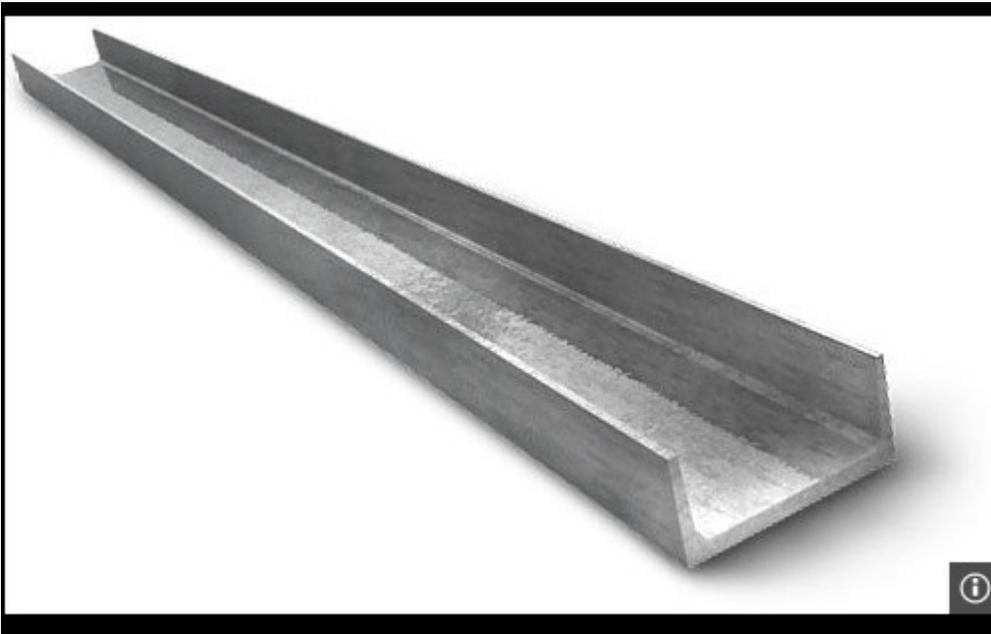
Thrie-Beam Guardrail
(notice (2) W's)



Thrie Beam
Terminal Connector





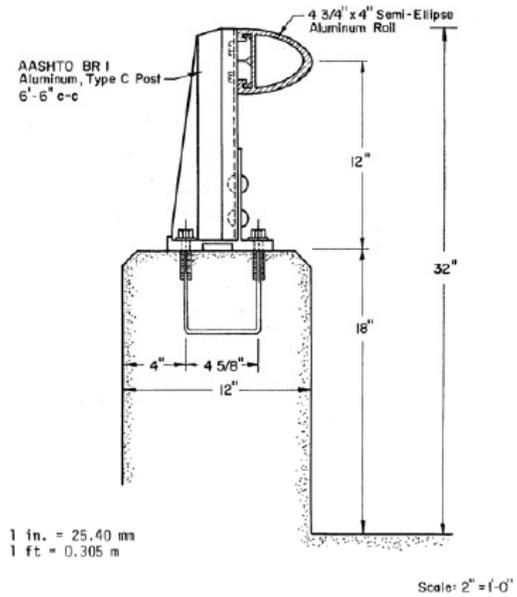


Guardrail Channel



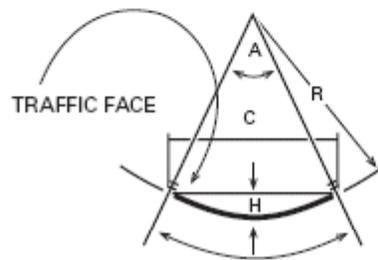
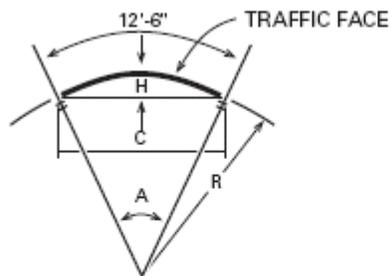
Tube Aluminum Guardrail

Standard 1-Bar Metal Rail



Elliptical Bridge Guardrail

Functions of 12' - 6" Arc for different radii



Convex and Concave Curved Guardrail Panels

[Printer Friendly Version of This Page](#) (opens in separate window)

Rail sections to be installed on curves having a radius of 5 feet to 150 feet can be curved in our fabricating facilities prior to delivery. Rail can be curved either convex or concave as required. Terms "convex" or "concave" refer to the direction curved, inward or outward, relative to the traffic face of the rail.

To find the Radius for a curved rail:

1. Starting at the last post in the straight run (Point A), lay a cloth tape along the path that the curved guide rail will follow.
2. Mark-off two points along the curved cloth tape: one at 6'-3", (Point B) and the second at 12'-6" (Point C)
3. Pull strong directly from starting point (Point A) to the second mark-off point (Point C).
4. Measure from the first mark-off point (Point B) over to the mid-point of the taut string. This measurement (D) is the rise.
5. Check the chart to find the radius (R), given the rise (D). Example: A rise of 3-7/8" would result in a radius of 60 feet.

Note: Follow the steps above for each piece of rail section in the curved run. The arc may not be consistent and each consecutive piece of rail may differ in radius from the previous one.

Functions of 12-ft., 6-in. arc for different radii:

Radii (R)	Angle (A)	Chord (C)	Rise (H)
5	143° 14'	9'-5 7/8"	3'-5"
10	71° 37'	11'-8 3/8"	1'-10 3/4"
15	47° 45'	12'-1 3/4"	1'-3 3/8"
20	35° 49'	12'-3 5/8"	11 5/8"
25	28° 39'	12'-4 1/2"	9 3/8"
30	23° 52'	12'-4 7/8"	7 3/4"
35	20° 28'	12'-5 1/8"	6 5/8"
40	17° 53'	12'-5 3/8"	5 7/8"
45	15° 55'	12'-5 1/2"	5 1/4"
50	14° 10'	12'-5 5/8"	4 5/8"

- Guardrail post are either 6" X 6" or 4" X 6".

To measure the length of guardrail:

- Measure from post bolt to post bolt, at guardrail splices.
- Guardrail is typically in 25' sections or 12' 6" sections.

Questions and Comments